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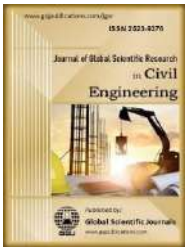

Evaluation of Public Transportation Requirements for the University of Kufa: the Main Campus

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ABSTRACT

Managing transportation systems on university campuses is complex and demands meticulous planning and execution. The University of Kufa is a case in point, with high levels of activity from pedestrians, public transport, and car traffic leading to serious congestion. This congestion creates conflict zones, compromising pedestrian safety, traffic operations, and transport efficiency. Innovative transportation approaches developed in higher education can have far-reaching implications for society. To tackle these challenges, a comprehensive field study was conducted to evaluate the transportation system at the main campus of the University of Kufa. The study collected data on waiting, bus, commuter, and disembarkation stations to identify weaknesses and shortcomings in the current transportation plan. Based on the findings, an integrated transportation system was proposed to reduce travel time, improve efficiency for faculty, staff, and students, and enhance safety. This research has critical implications for universities and other complex transportation systems, underscoring the importance of meticulous planning and management to ensure optimal performance and efficiency.

1. Introduction

Transportation refers to conveying people and goods from one location to another, utilizing various modes of transportation such as automobiles, aircraft, trains, and other vehicles. This involves efficiently moving goods and people between geographical points and using various transportation modes optimized for speed, cost, and safety [1]. It involves a complex system of planning, organizing, and coordinating the movement of goods or people, along with the necessary infrastructure, equipment, and personnel to support it. At its core, transportation is a logistics operation that requires careful consideration of factors such as mode of transport, routing, delivery timeframes, and cost-effectiveness. Ultimately, transportation aims to ensure that goods or people are moved safely, efficiently, and reliably from point A to point B [2]. The transportation sector plays a pivotal role in a society's technological advancement, facilitating the fast and efficient movement of people and goods across various distances. It encompasses

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many companies that offer transportation services for individuals, products, or infrastructure. The transportation industry is a crucial component of this sector, responsible for executing and managing transportation operations using cutting-edge technologies and sophisticated methodologies [3]. The group in question falls under the Global Industry Classification Standard (GICS) industry sector. It is part of the transportation sector, which encompasses a range of industries, including air freight, logistics, airlines, maritime, road and rail infrastructure, and transportation services [4]. It must cater to diverse demands to ensure an effective and equitable transportation system. If the commuting options are inadequate, urban commuters are left with no choice but to drive, even if they prefer alternative modes of transportation. Historically, transportation planning has been focused on automobiles, which has led to inefficient and unsustainable transportation systems [6]. Modern communities are equipped with advanced road networks that offer comfort and safety to drivers, allowing them to reach their desired destinations easily. However, peak congestion, toll payments, and parking fees can cause delays in some cases. Compared to the rest of the world, Germans are five times more likely to utilize public transportation, which reflects the success of Germany's public transport policies. These policies include a coordinated set of measures that work together to provide better service, attractive fares, convenient ticket booking, and intermodal transportation. Regional integration, higher taxes, vehicle-use restrictions, and land-use policies are all employed to promote compact mixed-use developments [7]. In the context of university transfers, the transportation issues confronting colleges and universities are multifaceted. The high enrollment rates of universities result in augmented demand for transportation and parking, leading to congestion in the surrounding areas [8]. The University of Kufa campus is a complex system of transportation that includes pedestrians, cyclists, cars, and buses. This often results in significant traffic congestion. The transportation management structure for the campus must consider three key areas: transit, parking, and fleet services. However, adopting an integrated approach that considers all components of the university's transfer context is crucial to managing the transportation demand effectively. The university transportation service is responsible for public transportation, focusing on essential transportation. Universities typically offer free transportation services to the campus community and unlimited local transportation lanes for students, faculty, and staff. The study aims to evaluate the public transportation service on the University of Kufa's main campus, identify weaknesses and shortcomings, and suggest methods to improve them.

2. Literature Review

Establishing the reliability of a transportation system is of utmost importance to ensure customer contentment with bus services. The dependability of a system is gauged based on its ability to maintain a steady travel routine and stick to predetermined schedules. The consistency of a transportation system is evaluated by analyzing its punctuality and progress uniformity, which are crucial in determining its overall performance [9]. Ensuring reliability is paramount since any inadequacy can lead to unwarranted stress and distress. The consequences of such an occurrence may include amplified waiting times, delayed arrival at the intended destination, and the inability to make connections [10]. Al Jameel and Kameel emphasized the importance of identifying the preferred transportation mode for transportation services. This information can assist in optimizing the transportation network and improving operational efficiency [11]. An inconsistent transportation system can hurt passenger retention and acquisition. As per the research conducted by the Florida Planning and Development Lab in 2004, consumer satisfaction is largely influenced by two major factors [12]. The first step in designing bus stop infrastructure is to evaluate the facility's location. This involves creating a design that prioritizes safe and efficient access for passengers while ensuring that bus operations and schedules are not disrupted. The second step is to focus on reducing wait times for passengers by optimizing the layout and design of the facility. These two factors are crucial in creating a transportation system that is both comfortable and secure for passengers. In 2008, Fellesson and Friman conducted a study on the perceived service satisfaction of customers using public transportation across eight major European cities. The study aimed to evaluate the level of satisfaction among customers with regard to the

quality of service provided by the public transportation system. The research findings were based on comprehensive data analysis and statistical modelling and provided valuable insights into the factors influencing customers' satisfaction with public transportation services in these cities [13]. The study in question identified four key variables that significantly impact the overall quality of bus services. These variables are related to bus services' system, design, staff, and safety aspects. Additionally, researchers in Cosenza, Italy, Eboli, and Mazulla found that 16 factors significantly contribute to consumer satisfaction with bus services. These factors include bus stop availability, route design, service frequency, reliability, seating arrangements, passenger capacity, cleanliness, pricing, information availability, promotional activities, safety measures, security practices, staff behaviour, complaint handling procedures, environmental sustainability, and bus stop maintenance standards [14]. In 1995, Andreassen conducted a similar survey targeting public transportation commuters in Norway [15]. According to recent research, travel time, fare level, and public transport design are the most crucial factors to consider when evaluating the quality of public transportation. Another study conducted in Sweden analyzed 13 different regions and found that passengers reported lower satisfaction levels when there were higher frequencies of critical incidents despite improvements made to bus services [16]. Although the quality of improvements is important, it is not the only determinant of customer satisfaction. Other factors, such as timely delivery, efficient processes, and excellent customer service, are crucial in ensuring customer satisfaction. Therefore, it is essential to consider all these aspects when striving to improve customer satisfaction.

3. The Main Characteristics That Must Be Available In Public Transportation

To enhance public transportation efficiency, it is essential to integrate it with other modes of transportation. This integration should ensure that the tracks are extended to appropriate distances away from crowded areas, facilitating easy transfer of passengers from one mode of transportation to another. Additionally, it is crucial to secure sufficient spaces for private parking lots in the city centre and near public transportation stations to encourage the use of public transportation [9]. The ideal public transportation routes should have a lengthy span, ensure safety, and be fully segregated from other modes of surface transportation [10]. To ensure optimal passenger experience, it is imperative to distribute the network and stations in a manner that minimizes the walking distance to no more than five minutes, especially in residential and commercial areas. This can be achieved by carefully planning and deploying stations in strategic locations, considering population density, traffic flow, and accessibility. By doing so, we can enhance passenger convenience and encourage greater adoption of public transportation [11]. Vehicles that possess superior aesthetics, exceptional build quality, and a comfortable ride experience both inside and outside while being free from any environmental noise should be prioritized [12]. The established pathways and facilities also adhere to stringent safety standards and pose no hindrance to the proprietors of adjacent structures [8]. To maximize speed and minimize time wastage, it is recommended that the inter-station distance in remote and sparsely populated areas should be large enough to reduce the frequency of stops. This approach is particularly effective in enhancing the overall efficiency of the transportation system [5]. The proposed route should incorporate a migration period of at least 90 seconds for metro or rail networks to facilitate the seamless transfer of passengers between different modes of transport [13]. To ensure optimum passenger comfort and safety, it is essential to provide adequate seating arrangements for all travellers, even during peak hours. This must be achieved while closely monitoring construction and operational expenses without compromising quality or safety standards [5]. Studies have shown that the average travel time for a passenger using public transportation from their point of origin to their final destination is lower than that for commuting in a private vehicle. This is attributed to reduced traffic congestion, dedicated lanes for public transportation, and more efficient routing [14].

4. Research Methodology

Data collection was conducted for two consecutive weeks, commencing on December 1, 2022, to

gather the required information. The data was meticulously recorded in a designated register and collected randomly between 7:00 AM and 1:00 PM. The timing of the collection was aimed at achieving consistency with a prior study conducted in 2010 by Fernandez and Joe et al. The data captured included waiting stations, the number of buses, the count of passengers, and the number of disembarks.

5. Study Site

The city of Kufa in Iraq is home to the esteemed University of Kufa, which offers an impressive range of educational disciplines across 22 faculties. With a total of 109 scientific departments, the university provides both male and female students access to various courses and opportunities for academic and personal growth.

6. The Current Transportation System

The university has partnered with private transportation companies to provide bus services for its students, with (Al-Fayrouz) being the contracted company for the current academic year. The fleet includes 15 buses, consisting of 10 minibuses accommodating 30 passengers each and 5 larger buses with seating for up to 50 passengers. The company employs a team of 20 individuals, with 15 staff members onboard the buses and 5 stationed at various stops along the routes. The morning shift runs from 7:00 AM to 3:00 PM, while the evening shift operates from 3:00 PM to 7:00 PM, as depicted in Figure 1.

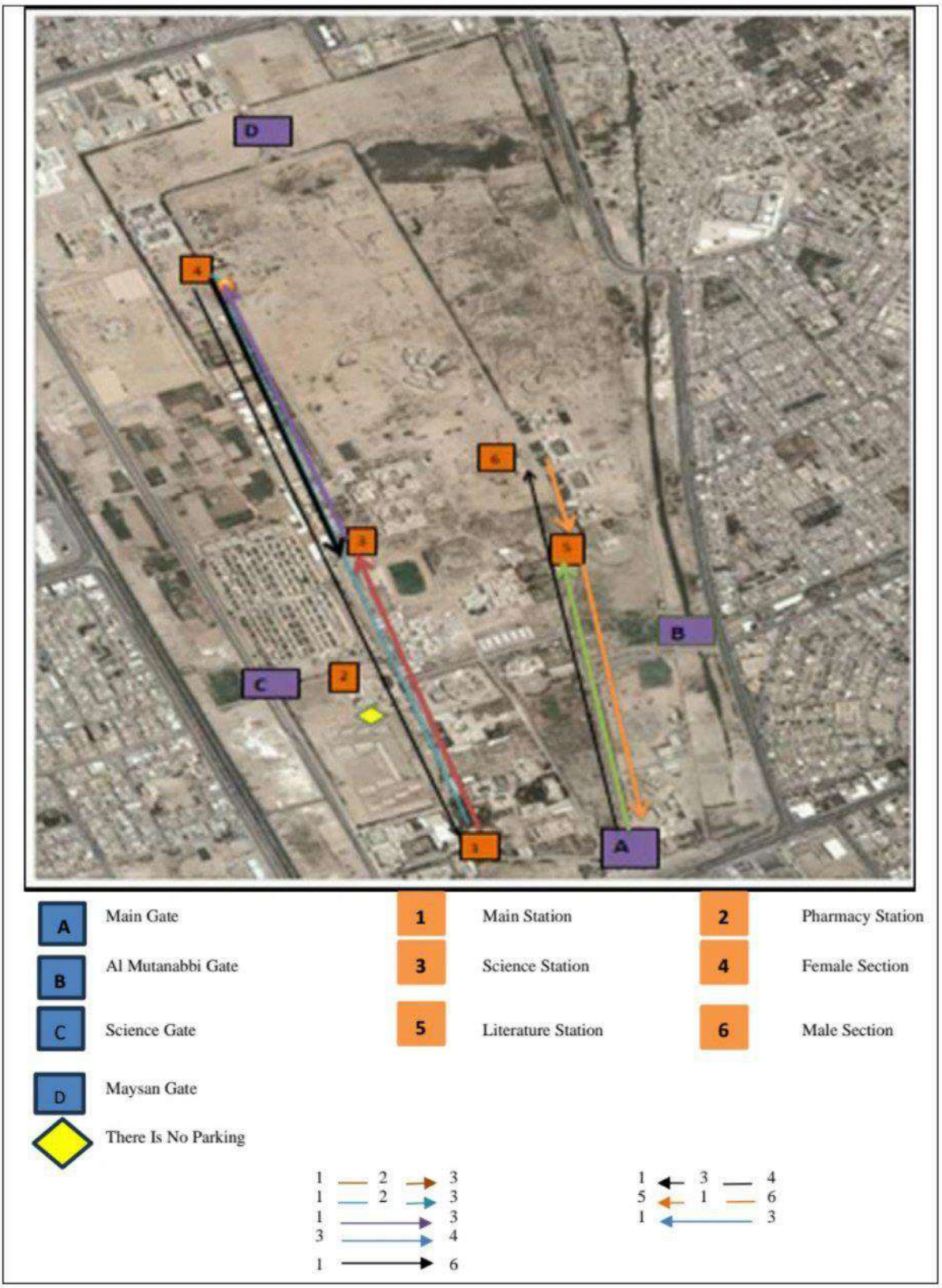


Figure 1. The distribution of bus stations to the University of Kufa

- According to estimates, the distance from the main gate of the College of Pharmacy to the College of Science is approximately 300 meters, while the distance from the College of Sciences to the parking lot of the College of Engineering is around 300 meters as well. From the parking lot of the College of Engineering to its deanship and internal departments, it is roughly 200 meters, with the final stretch measuring approximately 400 meters. The total distance adds up to around 1400 meters, which can be covered in roughly half an hour, accounting for any stops made during the boarding or disembarking passengers at the bus stop.

- The alternate route commences at the university's main entrance, adjacent to the university presidency, approximately 600 meters away. From the presidency, it leads to the faculties of literature and languages, covering a distance of roughly 300 meters. Then, it proceeds towards the inner sections, spanning around 300 meters. This journey takes around twenty minutes, accounting for the bus stops during boarding and alighting of passengers.

7. Data Collection and Analysis

This section serves the purpose of gathering diverse data types, including comprehensive information about the university and its faculties and data related to the bus routes and stations.

General Information

The initial step of the project involved gathering comprehensive data regarding the enrollment figures for the academic year 2021-2022. This included obtaining the exact count of students enrolled in both morning and evening classes, presented in Tables 1 and 2.

Table 1. Number of students in morning study for the academic year (2021-2022)

Faculty	Numbers of students
Antiquities and Heritage	97
Literature	1132
Physical education and sports science	357
Nursing	566
Pharmacy	1245
Medicine	1606
Sciences	2326
Political Sciences	394
Jurisprudence	635
Languages and translation	1095
Engineering	1876
Dentist	780
Computer Science and Mathematics	908
Total	28466

Table 2. Number of students in evening study for the academic year (2021-2022)

Faculty	Numbers of students
Literature	328
5. Physical education and sports science	121
7. Nursing	696
9. Sciences	881
11.Jurisprudence	80
12. Law	606
13. Languages and translation	317
14. Engineering	284
15. Computer Science and Mathematics	128
Total	6327

Bus Route Data

The data about the bus station's location and distance can be categorized as the second important data type. Table 3 provides a comprehensive representation of the station's location and distance on the current bus line's existing route.

Table 3. The location and distance for each bus station.

Station	Distance
1-Bus stop	0
2- Student club garage	100
3-The beginning of the medical club	200
4-The side of the Medical Club building,the side of the arch	300
5-Medical Reproduction Library	400
6-Medical bus stop	500
7-Pharmacy garage entrance	600
8-The beginning of the second garage from the pharmacy side	700
9-The beginning of the teachers' apartment in the university	800
10-science stand installation	900
11-Faculty of Science, Department of Physics	1000
12- 12- The main garage of the Faculty of Science	1100
13-Faculty of Engineering position The first column	1200
14-Opposite the monument statue of engineering	1300
15-Consulting office	1400
16-The end of the purpose of the other	1500

Student Survey

A supplementary data collection approach involves assessing students' contentment levels regarding the existing provision of public transportation services. This is achieved by devising a customized survey, distributed among various stakeholders, including faculty, staff, and students, following the guidance presented in the appendix. The responses are gathered and analyzed, and the ensuing outcomes are illustrated in Figures (1 – 10), as shown below.

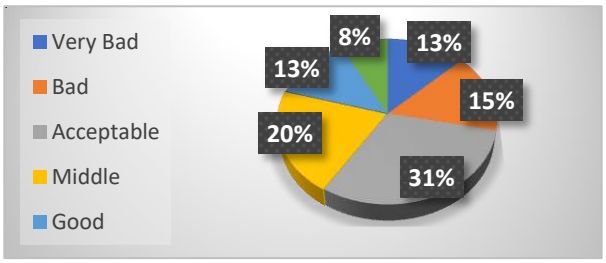


Figure 2. The student's questionnaire on availability of buses.

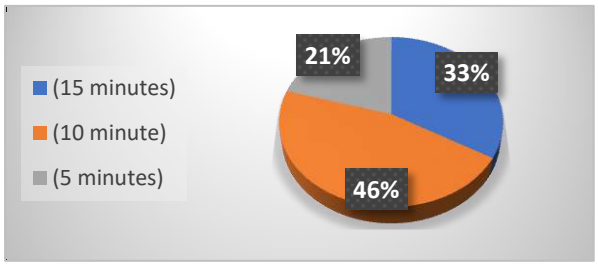


Figure 3. The student's questionnaire on duration of the trip that the bus takes.

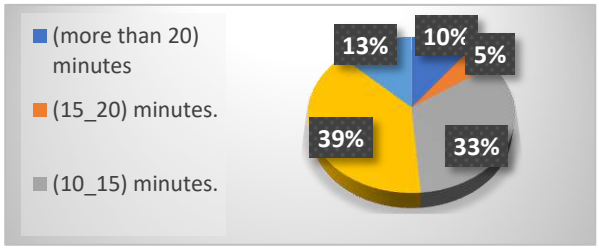


Figure 4. The student's questionnaire on waiting time at the bus station

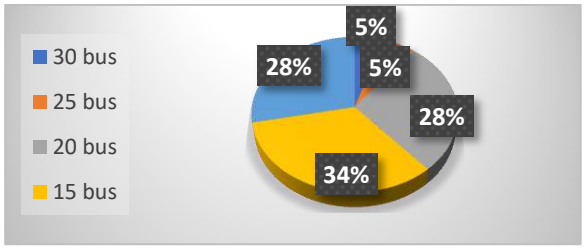


Figure 5. The results of the student's questionnaire on the sufficient number of buses in each line

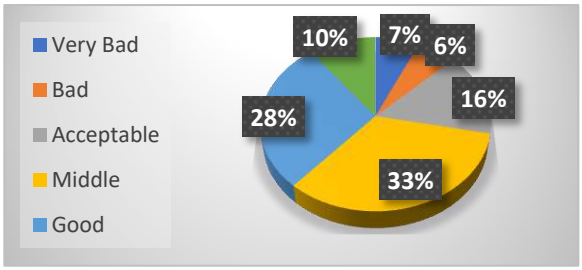


Figure 6. The results of the student's questionnaire on the possible to obtain a seat on the buses easily

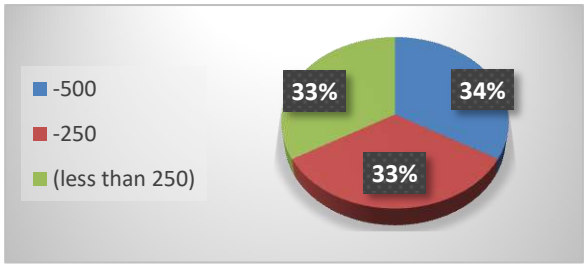


Figure 7. The results of the student's questionnaire on The bus fare is reasonable

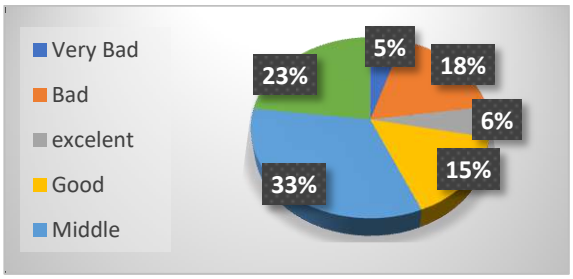


Figure 8. The student's questionnaire about the obligation to transfer passengers at the starting points

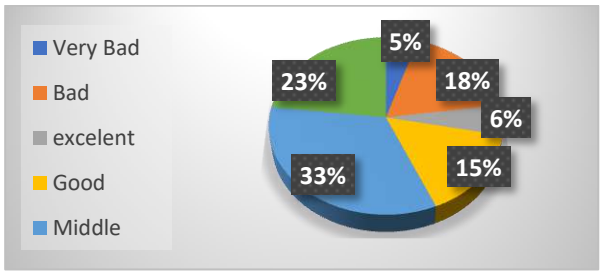


Figure 9. The results of the student's questionnaire about the obligation to transfer passengers at the starting points

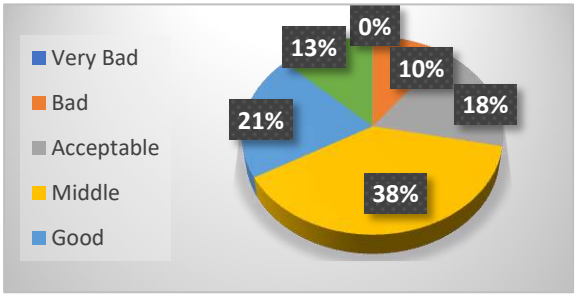
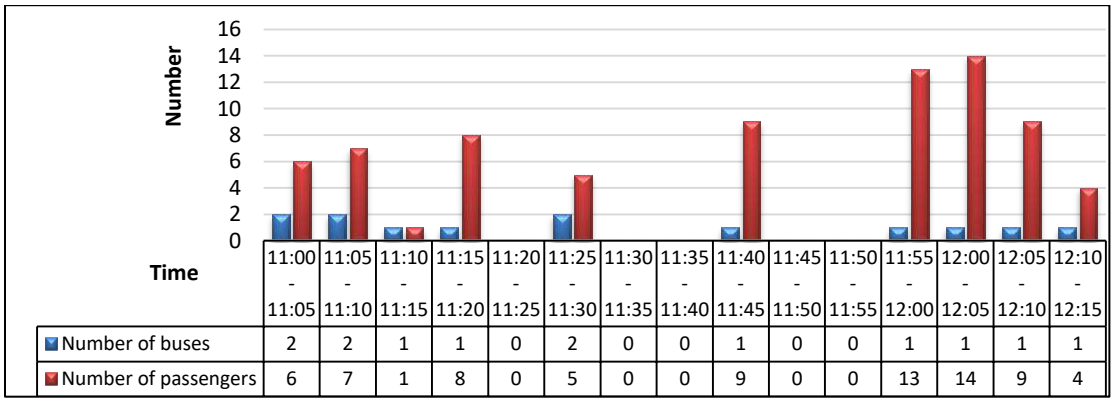


Figure 10. The student's questionnaire about the obligation to reach the complex at the last point of arrival

Campus Stations

The final category of data pertains to the count of trips originating from different locations and heading towards the campus gates and colleges and the count of return trips. The figures below provide a clear representation of this data.

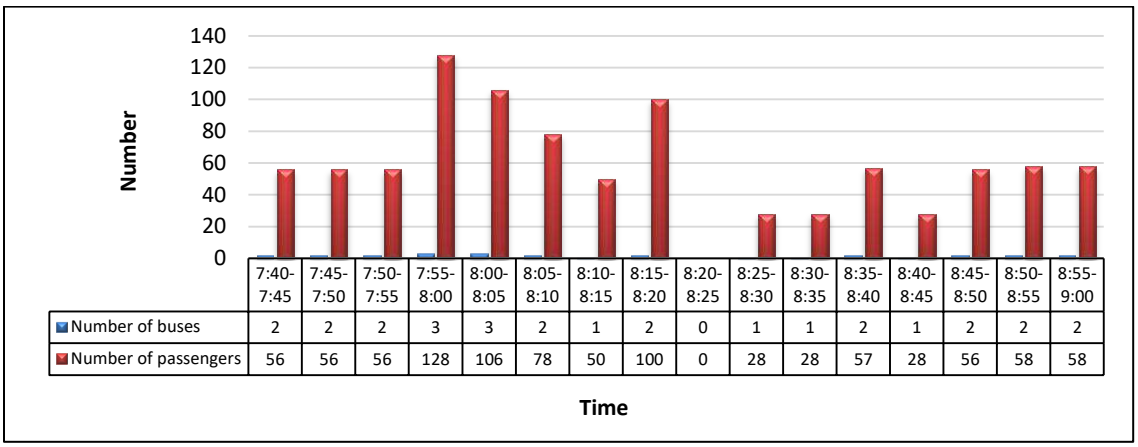


Time	11:00 - 11:05	11:05 - 11:10	11:10 - 11:15	11:15 - 11:20	11:20 - 11:25	11:25 - 11:30	11:30 - 11:35	11:35 - 11:40	11:40 - 11:45	11:45 - 11:50	11:50 - 11:55	11:55 - 12:00	12:00 - 12:05	12:05 - 12:10	12:10 - 12:15
Number of buses	2	2	1	1	0	2	0	0	1	0	0	1	1	1	1
Number of passengers	6	7	1	8	0	5	0	0	9	0	0	13	14	9	4

Figure 11. Number of flights coming from different locations - University of Kufa (Collected data from the main gate)

The Main Gate Station

Figure 11 displays the count of passengers on 1st December 2022 at various times during the working period. The graph reveals a rise in the number of passengers from 11:55 to 12:10 and a gradual decrease in the count from 11:20 to 11:55. On the other hand; Figure 12 represents the number of passengers on 14th December 2022 during the morning hours. The graph shows a peak in the passenger count during the morning period.

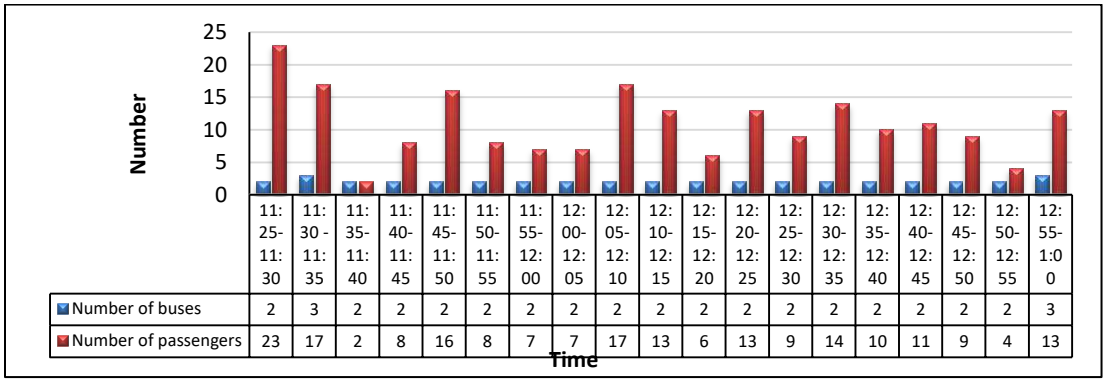


	7:40-7:45	7:45-7:50	7:50-7:55	7:55-8:00	8:00-8:05	8:05-8:10	8:10-8:15	8:15-8:20	8:20-8:25	8:25-8:30	8:30-8:35	8:35-8:40	8:40-8:45	8:45-8:50	8:50-8:55	8:55-9:00
Number of buses	2	2	2	3	3	2	1	2	0	1	1	2	1	2	2	2
Number of passengers	56	56	56	128	106	78	50	100	0	28	28	57	28	56	58	58

Figure 12. Number of flights coming from different locations - University of Kufa

Faculty of Science Station

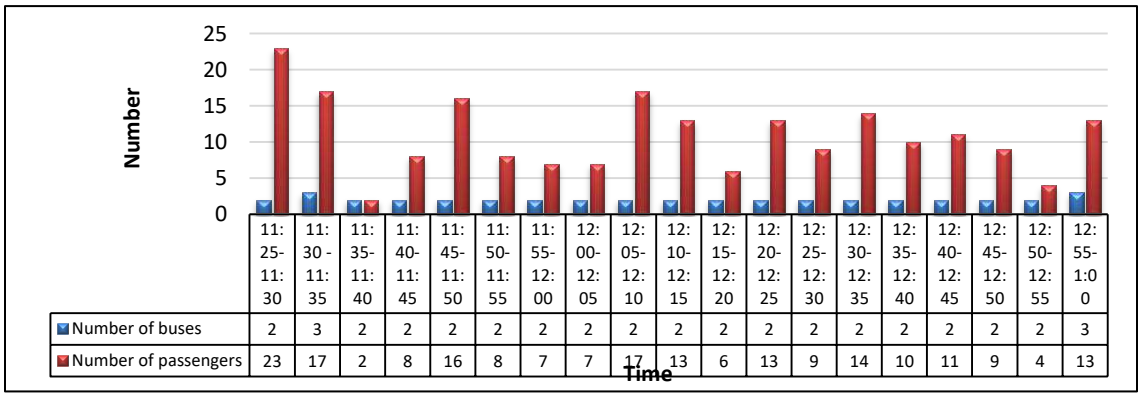
According to the data captured during the noon period on 1/12/2022, Figure 13 displays the count of passengers at various times throughout the work period. Notably, the data reveals a peak in passenger count during that specific time frame.



	11:25-11:30	11:30-11:35	11:35-11:40	11:40-11:45	11:45-11:50	11:50-11:55	11:55-12:00	12:00-12:05	12:05-12:10	12:10-12:15	12:15-12:20	12:20-12:25	12:25-12:30	12:30-12:35	12:35-12:40	12:40-12:45	12:45-12:50	12:50-12:55	12:55-1:00
Number of buses	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3
Number of passengers	23	17	2	8	16	8	7	7	17	13	6	13	9	14	10	11	9	4	13

Figure 13. The number of flights from different locations - University of Kufa at the Science Station.

Based on the information presented in Figure 14, it can be inferred that the data was collected during morning hours when there is typically a higher rate of people boarding. This leads to fluctuations in the number of passengers observed on 1/12/2022 throughout the day as various working shifts progress.



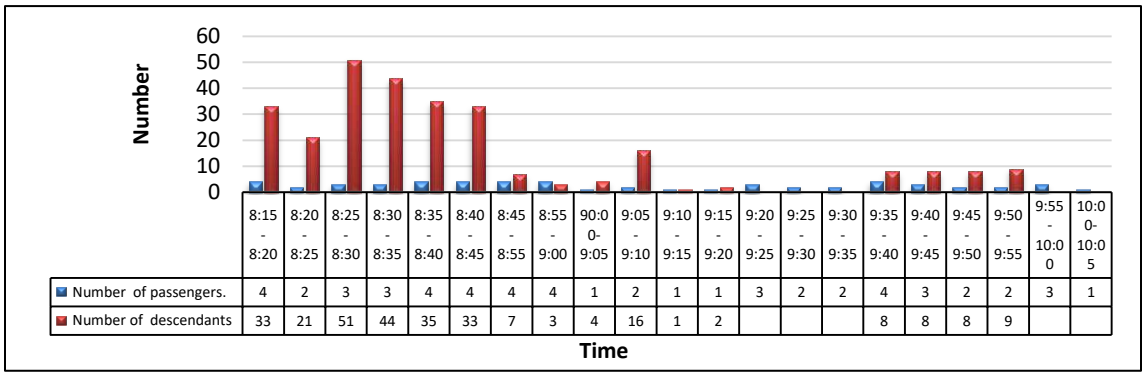
	11:25-11:30	11:30-11:35	11:35-11:40	11:40-11:45	11:45-11:50	11:50-11:55	11:55-12:00	12:00-12:05	12:05-12:10	12:10-12:15	12:15-12:20	12:20-12:25	12:25-12:30	12:30-12:35	12:35-12:40	12:40-12:45	12:45-12:50	12:50-12:55	12:55-1:00
Number of buses	2	3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3
Number of passengers	23	17	2	8	16	8	7	7	17	13	6	13	9	14	10	11	9	4	13

Figure 14. Number of flights coming from different locations - University of Kufa in the Arts station

The Faculty of Arts Gate Station

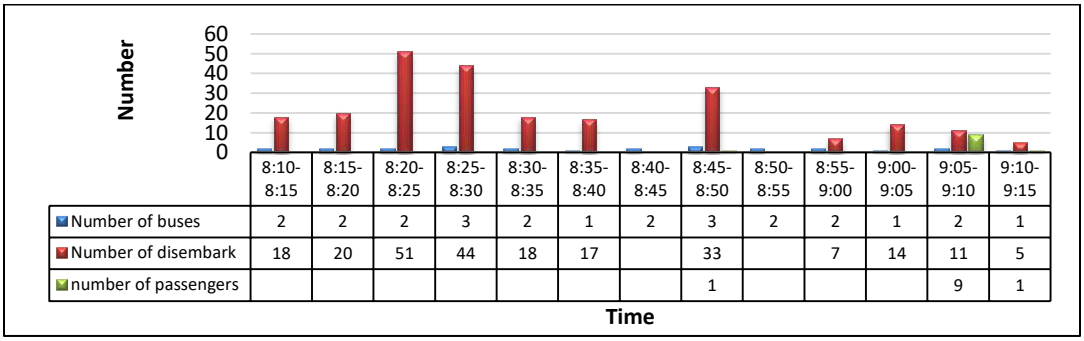
According to Figure 15, the passenger count on 1/12/2022 was recorded at different times throughout the working period due to the data being collected in the morning when the number of people leaving the transport was greater than the number of passengers boarding. It is worth noting that the highest passenger count was observed during this time.

The graph in Figure 16 exhibits the passenger count on December 14, 2022, at different intervals throughout the business hours. The data was gathered during the morning period when the disembarking rate exceeded the number of boarding passengers, reaching its peak.



	8:15 - 8:20	8:20 - 8:25	8:25 - 8:30	8:30 - 8:35	8:35 - 8:40	8:40 - 8:45	8:45 - 8:55	8:55 - 9:00	9:00 - 9:05	9:05 - 9:10	9:10 - 9:15	9:15 - 9:20	9:20 - 9:25	9:25 - 9:30	9:30 - 9:35	9:35 - 9:40	9:40 - 9:45	9:45 - 9:50	9:50 - 9:55	9:55 - 10:00	10:00 - 10:05
Number of passengers.	4	2	3	3	4	4	4	4	1	2	1	1	3	2	2	4	3	2	2	3	1
Number of descendants	33	21	51	44	35	33	7	3	4	16	1	2				8	8	8	9		

Figure 15. Number of flights coming from different locations - University of Kufa in the Arts station

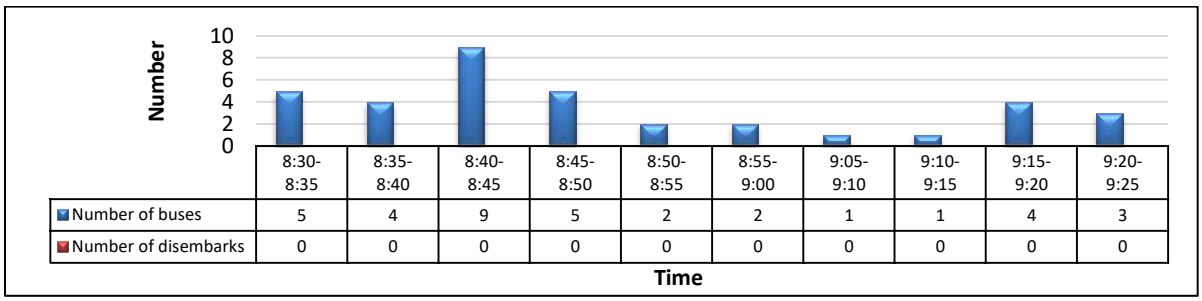


	8:10-8:15	8:15-8:20	8:20-8:25	8:25-8:30	8:30-8:35	8:35-8:40	8:40-8:45	8:45-8:50	8:50-8:55	8:55-9:00	9:00-9:05	9:05-9:10	9:10-9:15
Number of buses	2	2	2	3	2	1	2	3	2	2	1	2	1
Number of disembark	18	20	51	44	18	17		33		7	14	11	5
number of passengers								1				9	1

Figure 16. Number of flights coming from different locations - University of Kufa in the Arts station

The Faculty of Pharmacy Station

The data presented in Figure 17 displays the count of passengers who boarded or disembarked at a particular station at different times during the work period on 12/1/2022. The data collected during the morning period clearly indicates that there were no passenger movements or disembarkations at this station during this period.

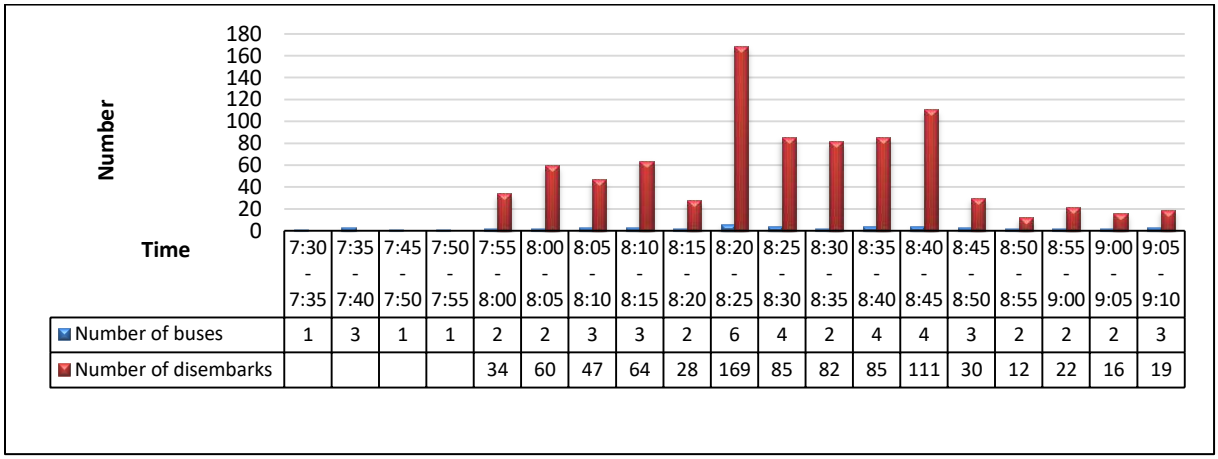


	8:30-8:35	8:35-8:40	8:40-8:45	8:45-8:50	8:50-8:55	8:55-9:00	9:05-9:10	9:10-9:15	9:15-9:20	9:20-9:25
Number of buses	5	4	9	5	2	2	1	1	4	3
Number of disembarks	0	0	0	0	0	0	0	0	0	0

Figure 17. Number of trips coming from different locations - University of Kufa at the pharmacy station

Faculty of Engineering Station

Figure 18 displays passenger count data captured on 1/12/2022 at various times throughout the work period. This data was collected during the morning period, specifically during the window of 8:20 AM to 8:40 AM, highlighting the peak passenger volume.

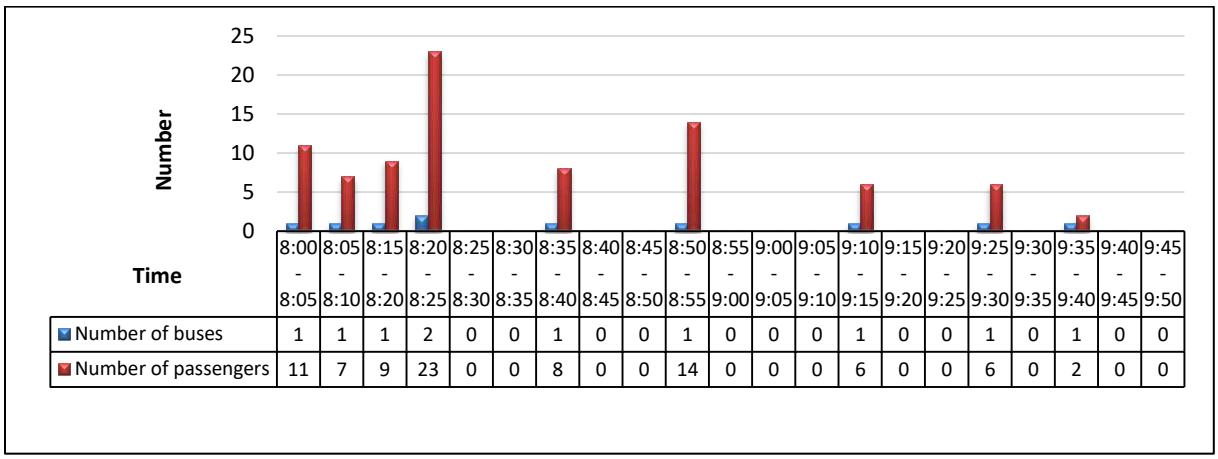


	7:30-7:35	7:35-7:40	7:45-7:50	7:50-7:55	7:55-8:00	8:00-8:05	8:05-8:10	8:10-8:15	8:15-8:20	8:20-8:25	8:25-8:30	8:30-8:35	8:35-8:40	8:40-8:45	8:45-8:50	8:50-8:55	8:55-9:00	9:00-9:05	9:05-9:10
Number of buses	1	3	1	1	2	2	3	3	2	6	4	2	4	4	3	2	2	2	3
Number of disembarks					34	60	47	64	28	169	85	82	85	111	30	12	22	16	19

Figure 18. Flights coming from different locations - University of Kufa at the station engineering

Student Accommodation For Boys

The graphical representation in Figure 19 displays the passenger count at distinct intervals during the work period. The data was collected in the morning, revealing a bus shortage from 8:55 AM to 9:10 AM, with no buses available after 9:40 AM.

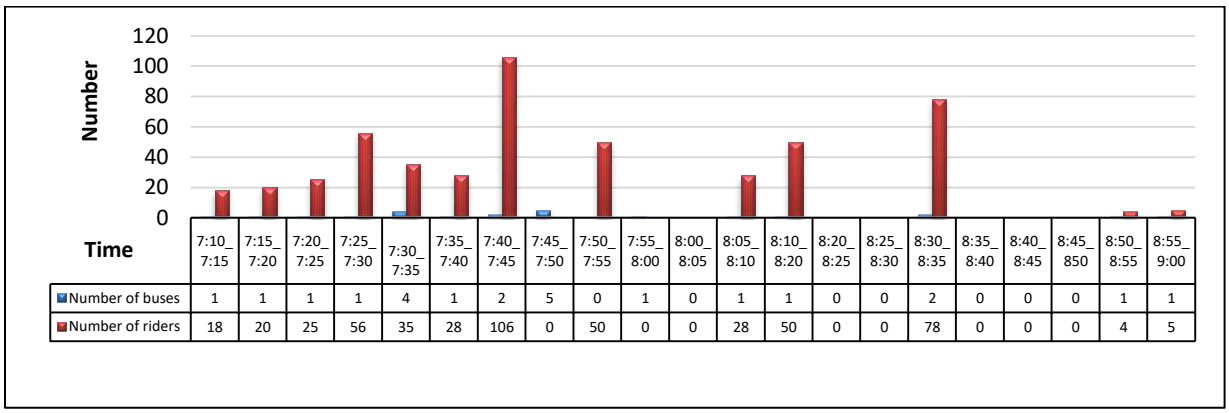


Time	8:00 - 8:05	8:05 - 8:10	8:15 - 8:20	8:20 - 8:25	8:25 - 8:30	8:30 - 8:35	8:35 - 8:40	8:40 - 8:45	8:45 - 8:50	8:50 - 8:55	8:55 - 9:00	9:00 - 9:05	9:05 - 9:10	9:10 - 9:15	9:15 - 9:20	9:20 - 9:25	9:25 - 9:30	9:30 - 9:35	9:35 - 9:40	9:40 - 9:45	9:45 - 9:50
Number of buses	1	1	1	2	0	0	1	0	0	1	0	0	0	1	0	0	1	0	1	0	0
Number of passengers	11	7	9	23	0	0	8	0	0	14	0	0	0	6	0	0	6	0	2	0	0

Figure 19. The number of passengers at the station during the working period

Student Accommodation For Girls

The graph in Figure 20 shows the passenger count at various time intervals during work. The data was collected in the morning time frame, which highlights the scarcity of buses from 8:00 AM to 8:10 AM and their complete unavailability from 8:30 AM to 8:50 AM.



Time	7:10_ 7:15	7:15_ 7:20	7:20_ 7:25	7:25_ 7:30	7:30_ 7:35	7:35_ 7:40	7:40_ 7:45	7:45_ 7:50	7:50_ 7:55	7:55_ 8:00	8:00_ 8:05	8:05_ 8:10	8:10_ 8:20	8:20_ 8:25	8:25_ 8:30	8:30_ 8:35	8:35_ 8:40	8:40_ 8:45	8:45_ 850	8:50_ 8:55	8:55_ 9:00
Number of buses	1	1	1	1	4	1	2	5	0	1	0	1	1	0	0	2	0	0	0	1	1
Number of riders	18	20	25	56	35	28	106	0	50	0	0	28	50	0	0	78	0	0	0	4	5

Figure 20. The number of passengers at the station during the working period.

8. Discussion

Having the above field data, one could find many problems in the public transportation of the university, therefore, it is necessary to find solutions. These solutions include the following:

- Introducing additional new lines that make the transportation process in one line pass through all stations periodically, better than the main station is the central gate and to reduce the crowd at the central gate. Boarding the faculty of Engineering bus, the student loses a lot of time in addition to the fare twice while waiting at each station.
- Two types of parking are needed: one for staff, which is already less than parking capacity, as the authors note, for all colleges on campus. On-campus car parks are under capacity, as observed in the field because the demand for car parks is always higher than capacity. For example, the parking lot of the engineering college, the parking lot of the medical school, etc. The second type of parking for students. All student vehicles must park in the temporary car park near the engineering gate. Therefore, there is an urgent need to plan for such situations on university campuses

9. Conclusions and Recommendations

This study sheds light on several important points related to transportation within the university setting. Firstly, the study shows that the university is particularly vulnerable to development in terms of its streets and roads, as well as the movement of public buses and private cars. It is important, therefore, to develop effective policies that align with the latest advancements in transportation worldwide in order to achieve the desired goals. Secondly, The research findings underscore the significance of examining the transportation system within the university premises. This approach facilitates the recognition and effective handling of existing transportation hurdles and paves the way for devising innovative solutions to address the transportation-related challenges faced by the university community. The third point highlighted in the study stresses the importance of dedicating resources towards enhancing the scientific aspect of the university. This objective can be accomplished through a well-planned research program and an efficient transfer plan that minimizes the unnecessary consumption of time and effort. By doing so, the university can ensure optimal utilization of resources and promote scientific growth and development. The study's findings suggest that it would be prudent for the university to make necessary preparations to accommodate a larger influx of pedestrians and vehicles on its roads and streets. This would ensure that ample space is available to accommodate visits or delegations to the university and prevent any inconvenience or congestion. The recommendations emphasize the importance of being proactive in anticipating future needs and taking measures to ensure the smooth flow of traffic in and around the campus.

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Appendix: Questionnaire

Dear Respondent

We are a research team from the University of Kufa to conduct research on *the Evaluation Of Public Transportation Requirements For The University Of Kufa: The Main Campus*.

We are pleased to inform you that you have been selected to participate in our studies. We hope that you will be able to complete the questionnaire as honestly and objectively as possible.

We promise that your responses will be treated confidentially. Thank you for giving up your precious time to help us with this research.

1- Are you satisfied with the availability of buses?					
Excellent	Good	Middle	Acceptable	Bad	Very Bad
2- What is the journey time that the bus takes?					
(5 Minutes)	(10 Minute)	(15 Minutes)			
3- Waiting time at the bus stop?					
(Less Than 5) Minutes.	(5_10) Minutes	(10_15) Minutes.	(15_20) Minutes.	(More Than 20) Minutes	
4- The sufficient number of buses per line?					
10 Bass	15 Bass	20 Bass	25 Bass	30 Bass	
5- Can I get a seat on the buses easily?					
Excelent	Good	Middle	Acceptable	Bad	Very Bad
6- The bus fare is reasonable?					
(Less Than 250)	(250)	(500)			
7- Commitment to turn for passengers at the starting points?					
Acceptable	Middle	Good	Excellent	Bad	Very Bad
8- Obligation to reach the complex or the last access point?					
Excelent	Good	Middle	Acceptable	Bad	Very Bad
9- Public facilities (presence, umbrellas, seats, services, sanitary facilities)?					
Excelent	Good	Middle	Acceptable	Bad	Very Bad